

USER MANUAL CLIMA MANAGER

FOR CLIMA⁺ 200 SYSTEM



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INTRODUCTION

CAUTION:

This manual must be read by or to each person, before that person operates, cleans, repairs, supervises the operation of, or uses this system in any way.

CAUCION:

Este manual debe ser leído por a cada persona antes de comenzar a operar, limpiar, reparar, supervisar la operación de, o utilizar esta sistema de cualquier manera.

ATTENTION:

Ce manuel doit être lu par, ou a, toute personne avant qu'elle ne mette en route, nettoie, répare, supervise le fonctionnement ou utilise cet système, de quelque manière que ce soit.

VORSICHT:

Jeder, der dieses System bedienen, reinigen, reparieren, überwachen oder auf irgendeine Weise benutzen soll, muß vorher diese Hinweise lesen oder vorgelesen bekommen.

ATTENTIE:

Een ieder, die dit systeem bedient, reinigt, repareert, controleert of op enige andere wijze gebruiken zal, dient vooraf deze bedieningsvoorschriften te lezen.

LIABILITY

Agro Supply BV cannot be held responsible for any costs, damage or personal injury if it's system is not used in accordance with the instructions as described in this manual.

The information provided in this manual is valid for the standard design of the system. Parts of your system may differ from this standard design.

Since Agro Supply BV is constantly improving its systems it may be possible that there are small differences between your system and this manual.

Though this manual has been put together with the utmost care, Agro Supply BV cannot accept any responsibility for costs, damage or personal injury arising from any fault and/or incompleteness in the content of this document.

GENERAL

This manual contains important information concerning safety, operation, adjustment, maintenance, cleaning and repair of the Agro Supply BV system. For uncomplicated functioning of the system, read this manual carefully and work according to the directions in this manual.

Besides the design and the used materials, also the operation and maintenance have great impact on the functioning, the life span and the operational costs of our system. You, as the owner of the system, are responsible for the execution of maintenance according to the directions and the intervals in this manual.

This manual will help you to gain knowledge to use the system as it should be used: correct operated and excellent maintained.

An Agro Supply BV system meets the demands, mentioned in the European machine guideline (CE).



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Written by Visser Machine Services.

GENERAL

This manual contains important information concerning safety, operation, cleaning, maintenance and breakdown remedies.

At all time this manual must be accessible for all personnel working with the system. Keep it in a permanent place, close to the system. When the manual is lost or damaged, order a new copy as soon as possible.

The user of the system should read and understand the total user manual before operating, cleaning, maintaining and repairing the system.

Never change the sequence of procedures as described in this manual.

Besides this manual also knowledge about the installation and adjustments of the system may be helpful for communication with the Agro Supply dealer. This information is described in the English-language installation manual, which is also delivered with this system.

SAFETY REGULATIONS

Before starting operation, cleaning, maintaining the system or before remedying breakdowns, first read this chapter and chapter [Safety](#).

LEGAL REGULATIONS

- All safety directions stated in this manual must be observed.
- Along with the safety regulations in this chapter, the instructions of the qualified trade organization of your country must be observed to avoid accidents.
- Before starting to repair or maintain the system, always consult your safety manager to discuss if a work permit is required for this job.
- All safety devices in the system and the safety indications mentioned in this manual are conditions to control the system safely. The owner and his qualified personnel are in the end the ones responsible for the safe use of the system.
- The owner is responsible for the ability of the qualified personnel to perform its duties according to the safety measures.
- Technical changes, which influence the safety working of the system, may only be executed after the approval of the service department of Agro Supply.
- Only use genuine Agro Supply parts or CE-certified parts for replacement.
- Agro Supply cannot be held responsible for any consequential damages to the system or other installations that were caused by technical changes, unprofessional maintenance and repairs on our system, which were executed by the customer.
- Warranty becomes invalid when consequential damages to the system, caused by technical changes, unprofessional maintenance and repairs, were executed by the customer.



DANGER!

Failure to obey legal regulations may result in permanent personal injury or death.



ATTENTION!

Failure to obey legal regulations may result in damage to the system.

HOW TO USE THIS MANUAL

The manual is constructed to provide a maximum amount of information with a minimum amount of searching. The key to easy reference is the Table of contents. Familiarize yourself with it and you won't have any trouble locating information from any area of system.

WHO SHOULD USE THIS MANUAL

Owner:

The owner (contractor, concern) is the person that owns or hires the system and puts this system into production. The owner must take care that the users of the system will read the manual.

Operator:

The operator is the person who operates the system as ordered by the owner. The operator must read the chapters [Introduction](#), [Safety](#), [Machine description](#), [Operation](#).

Professional:

A professional is someone who can assess the duties appointed to him on account of his education, knowledge and experience and who can assess the dangers attached, thereby avoiding these dangers.

Maintenance engineer:

The maintenance engineer is the professional who is deemed qualified by the owner to perform certain duties. The qualification only applies to those assigned duties. The maintenance engineer must read the total manual.

MANUAL INFORMATION

System type:

Clima⁺ 200 Unit for Broilers

Manual revision:

1.3 (February 2013)






SERIAL NUMBER

Each system has a unique project- and type number printed on the nameplate, which can be found on the door of the intake ventilator box. Note down this project- and type number to have it available when contacting the Agro Supply service department.



SYMBOLS

Symbols are used in the manual when special attention/caution is required while working on the system. The special symbols and their meaning are depicted in the below table.

Symbol:	Meaning:
	DANGER! This symbol is used when instructions should be followed to the letter. If not they may result in permanent personal injury or death.
	CAUTION! This symbol is used when instructions should be followed to the letter. If not they may result in permanent personal injury.
	ATTENTION! This symbol is used when instructions should be followed to the letter. If not they may cause damage to the system.
	LIVE STOCK! This symbol is used to advise for the well being of the livestock. Disregarding the advice may cause illness or death of the livestock.
	TIP! This symbol is used as a helpful hint to simplify the execution of certain tasks.



1. SAFETY

GENERAL

Only persons meeting the following requirements are authorized to work with the system. These persons should be:

- Skilled and specifically trained for their duties.
- Familiar with the contents of this manual.
- Familiar with the locations of the safety devices.
- 18 years old or above.
- Familiar with the national and regional regulations regarding safety.

These persons should have reached the minimum legal age required to perform this work.

These persons are NOT under influence of any drug, medicine or alcoholic drink.

**DANGER!**

Keep children and incompetent persons away from the system!

The system is only to be used for the purpose it was designed for. See the chapter [Machine description](#) for details.

SAFETY REGULATIONS

- Do not use the system when safety devices have been removed. This system may contain sharp edged parts, moving parts and rotating parts. When protective covers are removed, sharp edges and pinch points may be exposed. Use extreme caution and avoid touching or striking these areas with your hands or body because they may cause injuries.
- Do not enter parts of your body or objects into openings in the system. This may lead to serious physical injury or damage to the system. It can be dangerous to be in, on or under the system while it is operational.
- Do not touch or come near moving or rotating parts. Physical contact with these parts is dangerous.
- Do not work alone on the system. At least one other person should be present.
- Before starting to clean, maintain or inspect the system or before remedying breakdowns, follow the steps mentioned below:
 - Switch off the system and secure it against accidental switching on.
 - Post "Do not switch on" warning sign on the main switch.
 - Make sure that no components are moving.
- Before switching on the machine, you must check the following:
 - All safety devices are in place and are functioning.
 - No other persons are in the system.
 - No tools or objects are in the system.
 - No other persons are at risk.
- Do not use water to clean electricity cabinets.
- Manual activation of safety switches is forbidden.
- When the safety devices are put out of operation, the system must first be switched off and secured against accidental switching on.
- Work inside the electrical cabinet may only be undertaken by skilled personnel like Agro Supply service engineers or its dealers service engineers.
- Always switch off the main switch before opening electrical cabinets.
- After switching off the main switch, parts inside the electrical cabinet remain live for approximately one minute. The frequency inverters may hold a high voltage charge during this time. Do not touch parts inside the electrical cabinet as long as displays of frequency inverters are on.
- Several parts inside the electrical cabinet maintain voltage even when the main switch is turned off (main switch, main power supply, terminals for communication with other systems, etcetera).



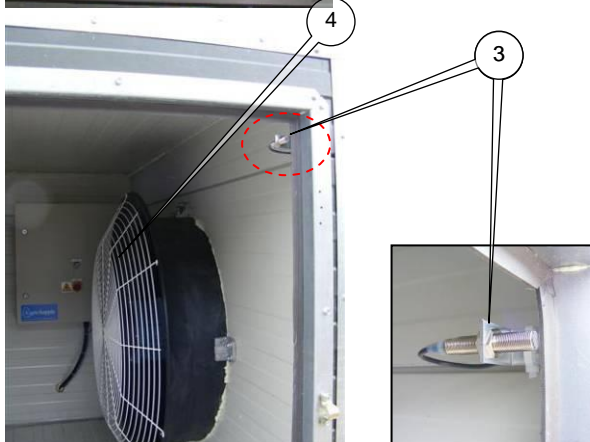
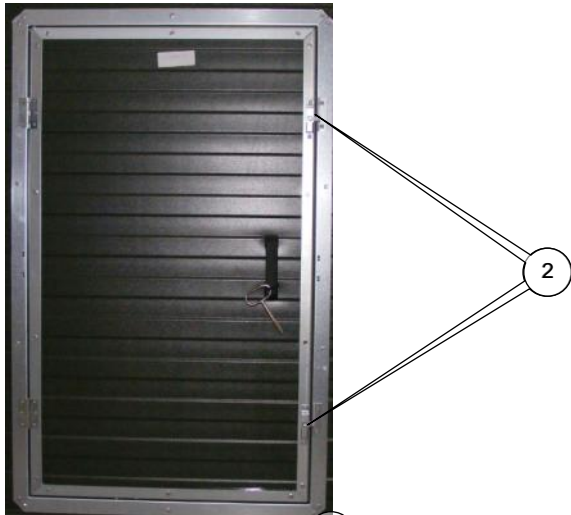
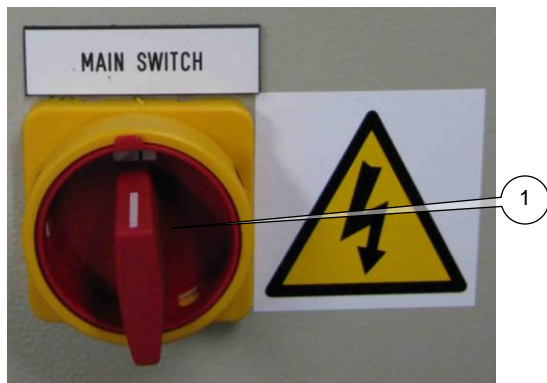
DANGER!

Failure to obey safety regulations may result in permanent personal injury or death.



ATTENTION!

Failure to obey safety regulations may result in damage to the system.



SAFETY PROVISIONS

Before operating the system, the safety devices must be checked for correct functioning. Also the protective covers must be mounted before starting to use the system. Repair or replace safety devices before using the system if they do not work properly. Never rely solely on safety devices. Always switch off the system and lock up the power source (1) before working on the machine.



DANGER!

Protective covers safeguard dangerous system areas. These covers are of utmost importance to operate the system safely. Never operate the system when protective covers are removed because serious injury or death may occur!

DEFINITION OF SAFETY DEVICES

Safety devices are: lockable doors (2), safety switches (3) and protective grids (4).

The safety switch stops (a part of) the system immediately when the door is opened. Protective grids shield off dangerous (moving) parts. These covers cannot be removed without tools.

Lockable doors are doors that can only be opened with a key. The key should only be in possession of a supervisor.

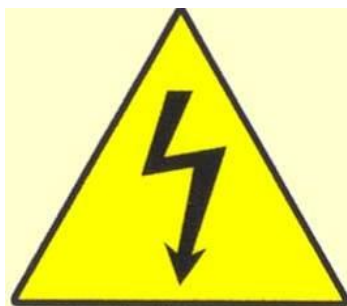


DANGER!

Lockable doors safeguard dangerous system areas. These doors are of utmost importance to operate the system safely. Never operate the system when doors are open or not locked because serious injury or death may occur!

WARNING LABELS

The Agro Supply system contains dangerous parts when they contact the body. The following labels are posted as a warning. Understand and remember the meaning of the warning labels.

**DANGER!**

Keep the warning labels clean. When labels become unclear, replace them.

The flashlight label is used to warn for dangerous voltage inside a cabinet. Contacting parts inside this cabinet may result in permanent personal injury or death.



2. MACHINE DESCRIPTION

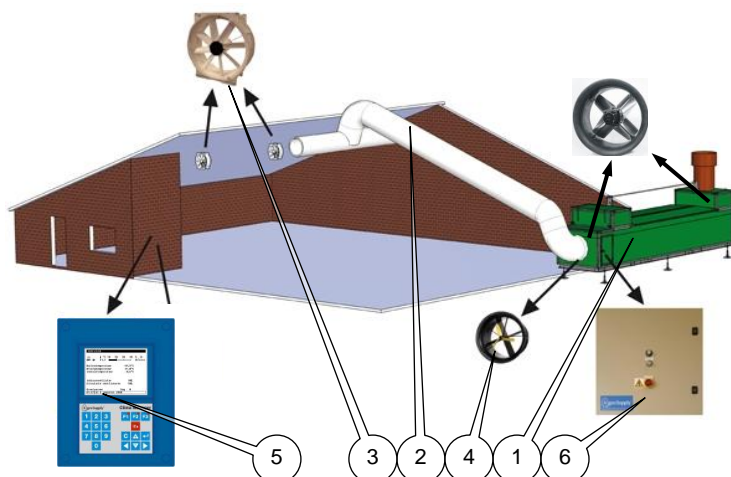
SAFETY REGULATIONS

Before starting operation, cleaning, maintaining the system or before remedying breakdowns first read the chapters [Introduction](#) and [Safety](#).

SYSTEM DESCRIPTION

The system description gives information about the complete system.
For detailed information of this system see the [Unit description](#) in this chapter.

CLIMA⁺ UNIT



Use:

The Clima⁺ Unit is designed to improve the climate for birds and at the same time reduce the heating costs of the house.

Construction:

A standard Clima⁺ system consists of:

- 1 Heat exchanger
- 2 Channels
- 3 Circulation fans
- 4 Air measuring unit
- 5 Clima Manager
- 6 Electrical cabinet

Process:

The heat exchanger exhausts warm air from the house while, at the same time, blowing fresh air through channels into the top of the house. The warm air preheats the fresh air before it leaves the heat exchanger. The circulation fans distribute the fresh preheated air evenly throughout the house.

Chapters and Manuals:

See below mentioned chapters or manuals for detailed information:

This chapter for unit information.

Chapter [operation](#) for operation details.

Chapter [maintenance](#) for cleaning and maintenance information.

Installation manual for information about installing and adjusting the Clima⁺ unit.

	<p>CAUTION! Do not enter objects through the protective covers into the ventilators, circulation fans or air-measuring unit.</p>
	<p>ATTENTION! Do not enter objects through the protective covers into the ventilators, circulation fans or Air-measuring unit.</p>

Safety:

Both ventilators are positioned inside the heat exchanger. The intake ventilator and air measuring unit are protected with a protective grid.

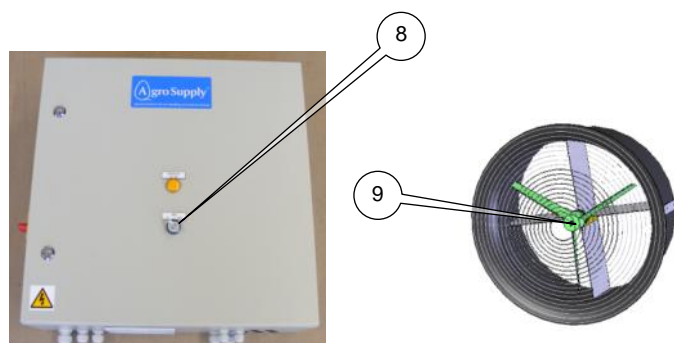
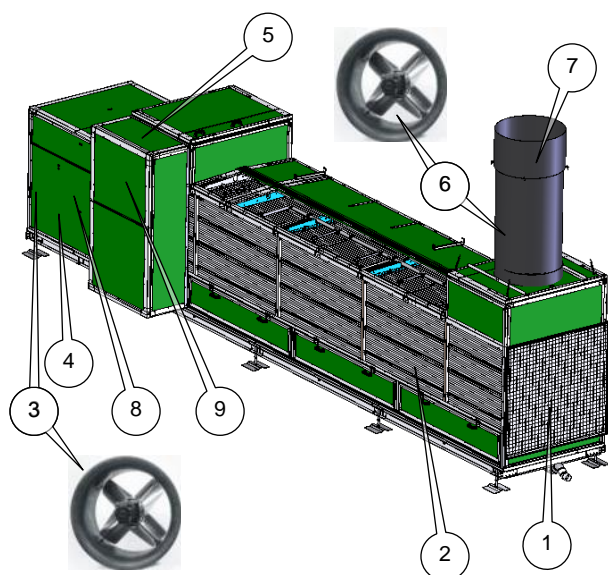
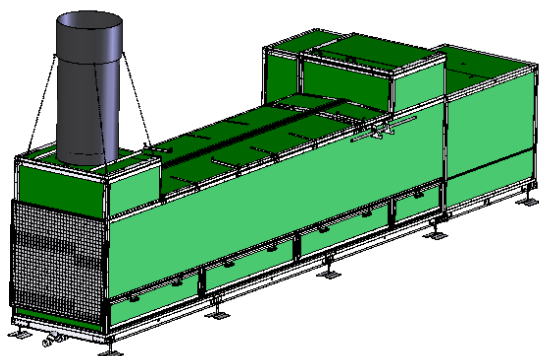
The circulation fans are positioned in the top of the house and therefore normally not reachable. In case those fans are placed on a reachable level they should be protected with protective grids.

Read the safety instruction of the units in the chapter unit descriptions.

No emergency stop is present. The power switch is positioned on the electrical cabinet.

UNIT DESCRIPTION

HEAT EXCHANGER



Use:

The heat exchanger is designed to exhaust warm air from a house while and at the same time blowing fresh air into a house. The warm air preheats the fresh air inside the heat exchanger.

Construction:

The heat exchanger consists of:

- 1 Filters
- 2 Air tubes
- 3 Intake ventilator
- 4 Intake ventilator box
- 5 Air return box
- 6 Extraction ventilator
- 7 Exhaust chimney

Attached to the heat exchanger are:

- 8 Electrical cabinet
- 9 Air measuring unit

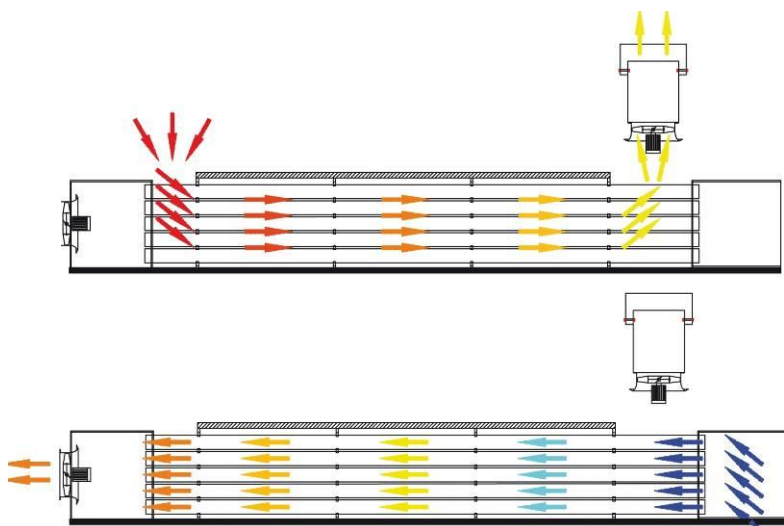
The heat exchanger has standard dimensions (l x h = 10.1 meter x 2.3 meter) except for the width. The width of the heat exchanger determines its maximum capacity. The heat exchanger is available in 4 widths:

Clima ⁺ 1,0 m	9.400 m ³ /hour
Clima ⁺ 1,5 m	13.700 m ³ /hour
Clima ⁺ 2,0 m	18.400 m ³ /hour
Clima ⁺ 2,5 m	22.300 m ³ /hour

Process:

The extraction ventilator exhausts warm air from the house. The air first passes the air measuring unit, flows into the air return box, around the air tubes and leaves the heat exchanger through the ventilator opening and the exhaust chimney.

The intake ventilator sucks fresh air through the heat exchanger and supplies it preheated into the house. The air first passes a filter, flows through the air tubes and leaves the heat exchanger through the ventilator opening. The heat transfer occurs at the air tubes.



Both the extraction ventilator and the intake ventilator run with the same speed. This speed determines the capacity of the ventilation. On the Clima Manager it is possible to adjust this speed, but it is also possible to program a ventilation curve that automatically adjusts the necessary ventilation to the need of the growing birds.

	CAUTION! Keep all doors of the heat exchanger closed and locked when it is running.
	CAUTION! Do not sit or crawl into the heat exchanger when it is running. Do not use a ladder or other platform to get above the exhaust chimney when the heat exchanger is running.
	CAUTION! Keep distant to the ventilators when they are running.
	CAUTION! Do not enter objects or body parts into the heat exchanger when it is running.
	ATTENTION! Do not enter objects or body parts into the heat exchanger when it is running.

Safety:

The heat exchanger is completely secured with protective covers and lockable doors. When the heat exchanger is running, keep all doors locked with padlocks.

Do not open or close any door when the heat exchanger is running. When you close a door while a ventilator is running, an under pressure may close the door with a strong force!

The electrical cabinet may be positioned inside the intake ventilator box. This box is accessible by a door, which is equipped with a safety switch. Do not open or close this door when the heat exchanger is running. Although the safety switch switches off the power supply to the intake ventilator, it takes some time before the ventilator is actually stopped.

Make sure the door remains open when you are inside the intake ventilator box and make sure the ventilator cannot start.

The exhaust chimney is not secured. Because of this, do not use a ladder or other platform to get above the chimney when the system is running.

At all time keep distance to the ventilators when you have access to them (for whatever reason). Be careful with loosely hanging clothes and long hair, do not come too close to the ventilators and do not touch them when the heat exchanger is running.

CIRCULATION FANS



Use:

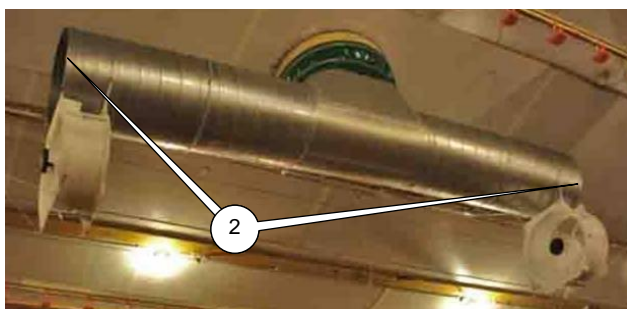
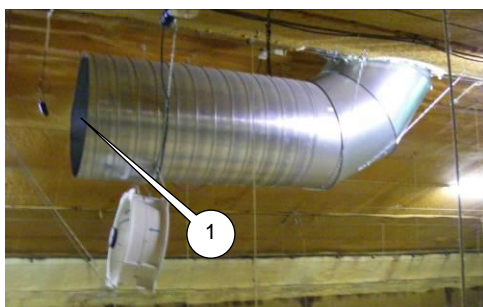
The circulation fans distribute the fresh preheated air evenly throughout the house.

Construction:

Several circulation fans are placed in the house. During installation of the Clima⁺ unit, the positions of these circulation fans is determined in such a way that the air delivered by the Clima⁺ unit is able to flow through the house without creating draughts, hot spots or cold spots.





Process:

One (1) or two (2) channel openings near the roof of the house supply the preheated fresh air. One or two circulation fans, positioned underneath the channels create an airflow that moves this fresh air through the house. Other circulation fans, positioned further away from the channel openings, take care of the further flow of fresh air through the house.



All circulation fans run with the same speed. On the Clima Manager it is possible to adjust this speed, but it is also possible to program a circulation fan curve.

The circulation fans are used to circulate the air inside the house all the time. When this is achieved, the speed of the circulation fans can be kept constant. It is not possible to give a standard advice for this speed setting. It depends on the size of the house, obstacles in the airflow and the normal house ventilation. Too much circulation causes draught on the birds; too little circulation causes temperature differences in the house, both resulting in an irregular distribution of the flock in the house.

	CAUTION! Do not use a ladder or other platform to get near the circulation fans when they are running.
	CAUTION! Keep distant to the circulation fans when they are running.
	CAUTION! Do not enter objects or body parts into the circulation fans when they are running.
	ATTENTION! Do not enter objects or body parts into the circulation fans when they are running.

Safety:

Normally the circulation fans are positioned in the roof of the house, and are not secured with protective grids. Because of this do not use a ladder or other platform to get near the circulation fans when they are running. When the circulation fans are placed lower than 2,7 meters from the floor they should be equipped with protective grids. At all time keep distance to the circulation fans when they are running. Be careful with loosely hanging clothes and long hair, do not come too close to the circulation fans and do not touch them.

AIR MEASURING UNIT

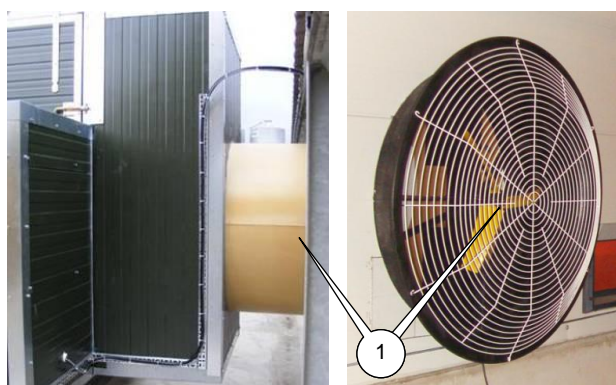


Use:

The air measuring unit measures the amount of ventilation and sends this information to the Clima Manager.

Construction:

The air measuring unit is installed in the exhaust opening of the house (1).



Process:

The extraction ventilator exhausts warm air from the house. This air passes the air measuring unit and drives the three bladed propeller. The rotation speed value of this propeller is sent to the Clima Manager that uses it to adjust the speed of the ventilators to meet the programmed capacity. When the Clima Manager does not receive the programmed amount of ventilation (within a certain amount of time), it will report an alarm.

	CAUTION! Keep distant to the air-measuring unit when it is running.
	CAUTION! Do not enter objects or body parts into the air-measuring unit when it is running.
	ATTENTION! Do not enter objects or body parts into the air-measuring unit when it is running.

Safety:

The air measuring unit is protected with a protective grid. At all time keep distance to the air measuring unit when it is running. Be careful with loosely hanging clothes and long hair, do not come to close to the air measuring unit and do not touch it.



3. OPERATION

SAFETY REGULATIONS

Before starting operation, cleaning, maintaining the heat exchanger or before remedying breakdowns first read the chapters [Introduction](#) and [Safety](#).

EXAMPLE: Based on minimum ventilation of 1 m ³ /h/kg							
Day:	Broilers	Weight:		Ventilation:			
		Broiler:	Total:	Minimum:	ACU 1,5m	House:	ACU setting:
		Kg	Kg	m ³ /h	m ³ /h	m ³ /h	
0	30.000	0,039	1.170	1.170	1.170	0	9%
1	30.000	0,047	1.410	1.410	1.410	0	10%
2	30.000	0,057	1.710	1.710	1.710	0	12%
3	30.000	0,072	2.160	2.160	2.160	0	16%
4	30.000	0,092	2.760	2.760	2.760	0	20%
5	30.000	0,115	3.450	3.450	3.450	0	25%
6	30.000	0,138	4.140	4.140	4.140	0	30%
7	30.000	0,162	4.860	4.860	4.860	0	35%
8	30.000	0,194	5.820	5.820	5.820	0	42%
9	30.000	0,227	6.810	6.810	6.810	0	50%
10	30.000	0,264	7.920	7.920	7.920	0	58%
11	30.000	0,305	9.150	9.150	9.150	0	67%
12	30.000	0,347	10.410	10.410	10.410	0	76%
13	30.000	0,395	11.850	11.850	11.850	0	86%
14	30.000	0,455	13.650	13.650	13.650	0	100%
15	30.000	0,480	14.400	14.400	12.604	1.796	92%
16	30.000	0,533	15.990	15.990	11.508	4.482	84%
17	30.000	0,588	17.670	17.670	10.275	7.395	75%
18	30.000	0,649	19.470	19.470	10.275	9.165	75%
19	30.000	0,716	21.500	21.500	10.275	11.025	75%
20	30.000	0,775	23.250	23.250	10.275	12.975	75%
21	30.000	0,843	25.290	25.290	10.275	15.015	75%
22	30.000	0,914	27.420	27.420	10.275	17.145	75%
23	30.000	0,988	29.640	29.640	10.275	19.365	75%
24	30.000	1,065	31.950	31.950	10.275	21.675	75%
25	30.000	1,145	34.350	34.350	10.275	24.075	75%
26	30.000	1,227	36.810	36.810	10.275	26.535	75%
27	30.000	1,311	39.330	39.330	10.275	29.055	75%
28	30.000	1,397	41.910	41.910	10.275	31.635	75%
29	30.000	1,484	44.520	44.520	10.275	34.245	75%
30	30.000	1,572	47.160	47.160	10.275	36.885	75%
31	30.000	1,661	49.830	49.830	10.275	39.555	75%
32	30.000	1,749	52.470	52.470	10.275	42.195	75%
33	30.000	1,838	55.140	55.140	10.275	44.865	75%
34	30.000	1,928	57.840	57.840	10.275	47.565	75%
35	30.000	2,017	60.510	60.510	10.275	50.235	75%
36	30.000	2,106	63.180	63.180	10.275	52.905	75%
37	30.000	2,194	65.820	65.820	10.275	55.545	75%
38	30.000	2,282	68.460	68.460	10.275	58.185	75%
39	30.000	2,370	71.100	71.100	10.275	60.825	75%
40	30.000	2,456	73.680	73.680	10.275	63.405	75%
41	30.000	2,541	76.230	76.230	10.275	65.955	75%
42	30.000	2,626	78.780	78.780	10.275	68.505	75%

VENTILATION

This chapter describes how to use the Clima Manager to control the Clima⁺ unit according a minimum ventilation curve. Before starting to control the Clima⁺ unit it is important to have basic knowledge about the climate inside a birds house.

The minimum necessary ventilation in a birds house is approximately 1 m³/hour/kilo unless otherwise stated.

By estimating the weight of a bird on a certain day during the cycle and multiplying this with the number of birds in the house, you know the minimum ventilation needed in your house on that day.

See alongside table and the graphic as a typical example.

The table shows the increasing weight of the birds and thus the increasing need of ventilation. The need of ventilation is visualized in the graphic (minimum ventilation, brown dashed line).

In the alongside table you can see that during the first 2 weeks of the cycle, the Clima⁺ unit supplies all the ventilation, but then it reaches its maximum capacity. This is visualized in the graphic (Clima⁺ 1.5 m, green line).

After this first 2 weeks another ventilation system (the so called normal house ventilation) is necessary to supply the extra ventilation. See the graphic (house ventilation, blue dotted line).

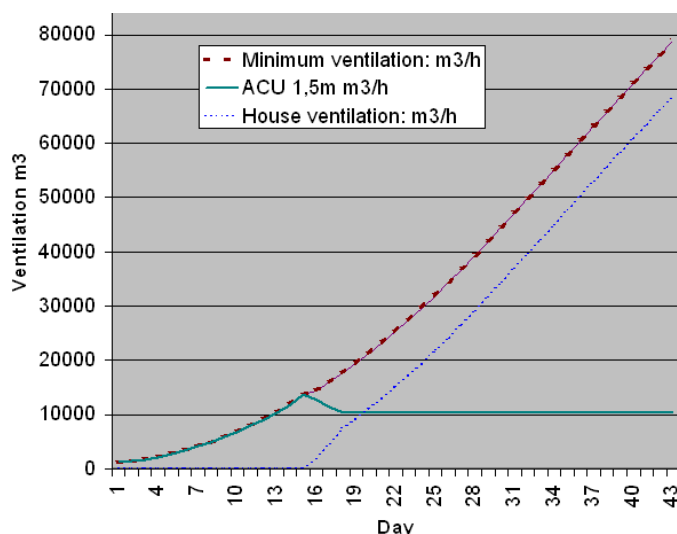
A VENTILATION CURVE

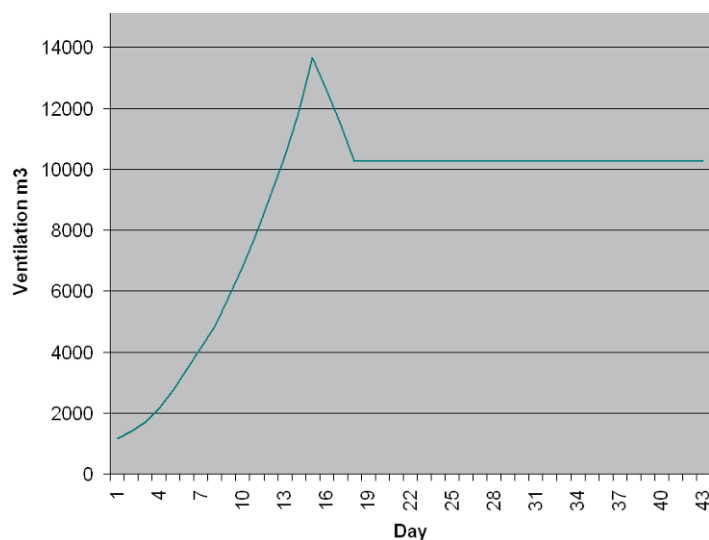
As you can see in the graphic the needed ventilation is a curved line, the so called ventilation curve.

With the Clima Manager it is possible to program this ventilation curve that takes care of (part of) the heating of the house and the correct minimum ventilation during the first days of a new flock.

Before starting to program this ventilation curve, first you need to know the maximum capacity of your heat exchanger:

Clima ⁺ 1,0 m	9.400 m ³ /hour
Clima ⁺ 1,5 m	13.700 m ³ /hour
Clima ⁺ 2,0 m	18.400 m ³ /hour
Clima ⁺ 2,5 m	22.300 m ³ /hour





In the alongside graphic, you can see the necessary ventilation curve for a Clima⁺ 1,5 m (with a maximum capacity of 13.700 m³/hour) using the example table of the previous page.

The Clima⁺ unit is able to follow this necessary ventilation curve when 4 breakpoints are programmed.

With the below explanation it is possible to find the 4 breakpoints. (In the Clima Manager, more breakpoints can be programmed if needed).

1st breakpoint:

On the first day of the cycle, you calculate the necessary minimum ventilation and the corresponding fan speed (in % of its maximum).

2nd breakpoint:

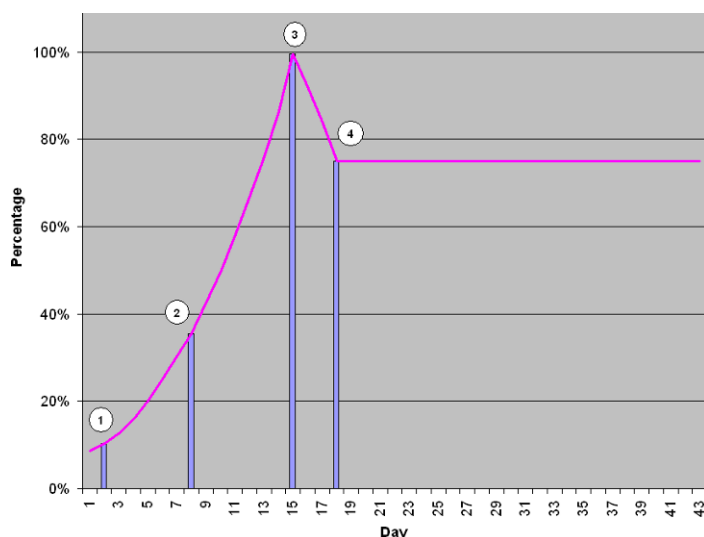
On the seventh day of the cycle, you calculate the necessary minimum ventilation and the corresponding fan speed (in % of its maximum).

3rd breakpoint:

With the capacity of your heat exchanger, you can estimate on which day the heat exchanger has to run with a fan speed of 100% to give its maximum ventilation.

4th breakpoint:

The speed setting of the 4th breakpoint is the constant speed setting used from this breakpoint day until the Clima⁺ unit is stopped. This breakpoint is a few days after reaching the maximum capacity and its fan speed is approximately 75%. This reduces energy costs.



LIVE STOCK!

When the Clima⁺ unit reaches its maximum capacity the normal house ventilation must gradually start to supply fresh air. You may program the minimum setting of the house ventilation to coincide with the capacity of the Clima⁺ unit. Other settings of the normal house ventilation (temperature, maximum ventilation) remain the same as running without the Clima⁺ unit.



LIVE STOCK!

During days with warm weather, the house temperature may become too high and the normal house ventilation needs to cool the house while the Clima⁺ unit keeps supplying the minimum ventilation. Therefore it's very important that the normal house ventilation is NOT switched off, but only the minimum ventilation setting is set to 0.



TIP!

When the Clima⁺ unit supplies enough heat and a lot of house heaters are switched off, it may be allowed to reduce the minimum allowed ventilation below 1 m³/hour/kilo, because less CO₂ is produced.



EXPLANATION OF THE SCREENS

CLIMA MANAGER

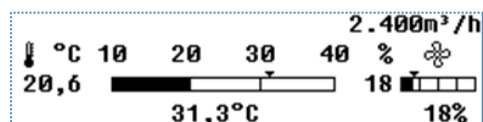
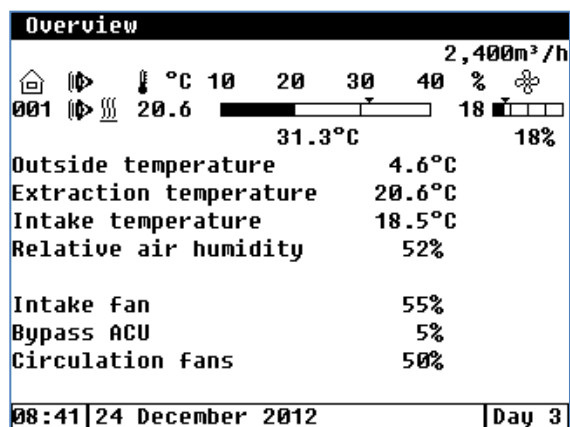
The large graphic display on the Clima Manager can show several screens of information about the status of the heat exchanger. **Since the information visible institutions determined by the installer settings, it may be that the scenes shown in the examples do not correspond with those in your own computer. Items that are not installed therefore are not shown.**

There are three speed dial keys F1, F2 and F3, and an alarm button. The most common screens or selections are thus easily accessible.

F1: Manual Controls

F2: House status

F3: Graphs button to quickly switch between data and a graph display in some scenes.



8:46 ma 24 december 2012 Day 3

Overview screen:

If the Clima Manager is not touched for a few minutes, the display light will go out and jump back to the overview screen. Here one can also come from any screen by repeatedly pressing the [C] key.

The [C] key is always a screen jumped back.

As the name suggests, here are the latest things in one glance.

(Data in this screen cannot be changed!)

Below the two horizontal bars, the setpoints are displayed, while in front of them the actual measured value is displayed. Left is the house temperature and on the right is the ventilation. (extracted air)

In the upper right corner the actual air quantity is displayed in m³/h.

In the lower left the present time and date is displayed; on the right the present (curve) day number.

Main menu		
1 Manual control		
2 Climate controls		
3 -----		
4 Timers		
5 Info		
6 Alarm		
7 System		
Access code	0000	
09:02 24 December 2012		Day 3

Main menu:

From the overview screen by pressing the "enter" button you get to the main menu.

There are two possibilities to move around the menus:

- With the up and down arrow keys, it's possible to move through the menu and then select the desired choice with the "enter" button.
- One can also go directly to a menu by the number that stands before the choice by using the numeric keypad.

The final line [**Access code**] is intended only for the installer and is protected by a code. Here, once all the allocations for the entire installation will be done. In case there are some changes done in here by unauthorized people, this may result in wrong functioning of the Clima⁺ unit.

Main menu: 1 Manual control

1 Manual control		
Extraction fan	auto	
Intake fan	auto	
ACU-valve	auto	
Bypass ACU	auto	
Air inlet valve	auto	
Circulation fans	auto	
Rinse timer 1	auto	
Rinse timer 2	auto	
08:54 24 December 2012		Day 3

Main menu => [1]

- [1] **Manual control**



The manual control menu is also directly accessible by pressing the F1 key.

Here, all visible arrangements can be operated manually, if that would be necessary. Normally, all will be set to AUTO and the Clima Manager does its job.

Should a situation occur for a particular item and so should be set to manual, you can simply select the relevant scheme and change the field [auto] after pressing the "enter" button. Then the choice [man.] is selected and confirmed by "enter". At the time the option "MANUAL" is confirmed, there will also be the symbol of a hand to clearly indicate that a value can be entered manually. From that moment onward, the control will stay at this set value.

Even though the house status is set to "not in use", the manual control has priority over that.

In this example, the setting for the extraction fan manually is set at 55%.

If there are one or more manual controls active, this is demonstrated by a flashing red LED in the [F1] button. This serves to remind you that there is a manual operation is active.

1 Manual control		
Extraction fan	man.	055%
Intake fan	auto	
ACU-valve	auto	
Bypass ACU	auto	
Air inlet valve	auto	
Circulation fans	auto	
Rinse timer 1	auto	
Rinse timer 2	auto	
08:53 24 December 2012		Day 3

Main menu: 2 Climate controls

2 Climate controls		
1 House status	in use	
2 Extraction fan		
3 Intake fan		
4 Valves ACU		
5 Circulation fans		
6 Heating		
7 Miscellaneous		
8 Growth curves		
9 Alarm		
09:05	24 December 2012	Day 3

21 House status		
House status	in use	
Growth curve temperature	+0.0°C	31.3°C
House temperature	20.6°C	
Growth curves	on	
Day	003	3
Corr.	+00	
Rinse timer 1	off	
Rinse timer 2	off	
08:41	24 December 2012	Day 3



If in a screen the text is underlined, such as "Growth curve temperature" in above example, this text can be selected as well. By pressing the enter button on this text, there will be a direct jump to the belonging curve settings.



"7 -----" Hyphens in a menu, indicate that the choice is not available. The installer has during the setup / assignments of the house this item disabled, because it will not be present.

Main menu => [21]

- [2] Climate Controls

[1] House status



The House status menu is also directly accessible by pressing the F2 key. Here, the most important items quickly can be checked and changed when needed.

House status

- **"in use"**: This means that the CM runs in automatic mode. The Clima⁺ unit is used!
- **"not in use"**: This means that the CM is not running, all automated controls are stopped. (Controls set on manual, however, will continue to work!)
- **"cleaning"**: Before switching the CM to "not in use". This function can be activated to start an extra intensive cleaning process. This process can be programmed in advance at the time clocks.

Growth curve temperature

- If a curve is activated, here through an offset to the target for the house (far right value) can be changed.
- If no curve has been activated for the house temperature, immediately the target for the house is entered.

House temperature

- Measured house temperature. (If several temperature sensors are assigned, the average temperature will be displayed! Also the temperature will be underlined, to being able to read each sensor individually)

Growth Curves

- Here all curves immediately can be switched on or off. (If off, the computer will work with the last settings)


Day

- Here the age of the animals should be set. Far right is the day number where the curve data is collected from. (+ or – correction)

Corr.

- It is possible to shift the curve day, if the desired conditions are in the house are not as expected. However, this correction by plus or minus offset, one can easily come back to the original curve by making this correction zero again..

Main menu: 2 Climate controls

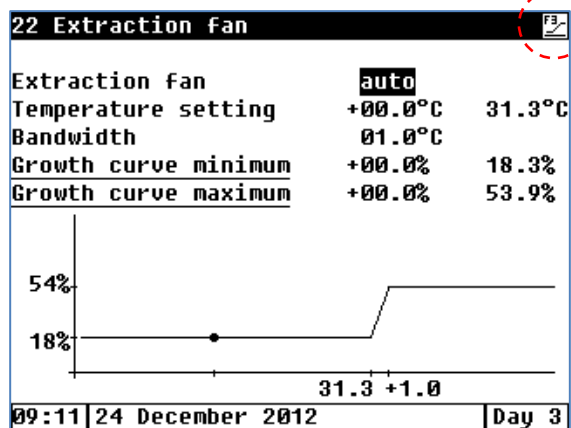
22 Extraction fan 		
Extraction fan	auto	
Temperature setting	+00.0°C	31.3°C
Bandwidth	01.0°C	
Growth curve minimum	+00.0%	18.3%
Growth curve maximum	+00.0%	53.9%
<hr/>		
House temperature	22.1°C	
Calculated ventilation	18.3%	
Current ventilation	0.0%	
During rinse cycle	10%	
<hr/>		
1 Reduction		
09:18 24 December 2012		Day 3

Main menu => [22]

- [2] Climate Controls
- [2] Extraction fan

This is the overview screen for the extraction fan, which is leading. The intake fan will follow the extraction fan. Here can be read out, but also set, how the heat exchanger should work. In this example on the left, the maximum value is set higher, to make it possible to ventilate extra in case needed. In case this is not desired, this can be altered at the maximum ventilation curve.

In subsequent scenes, the Clima Manager works more intelligent and can be applied first to increase ventilation and if the house temperature gets too warm, the ventilation will be decreased to an absolute minimum.



Wherever the F3 symbol appears in the upper right corner on the screen, the F3 key can toggle between display in tabular or graphical format. At curve settings, this can provide a much better overview.

Extraction fan

- Like in the manual menu, also here the control for extraction fan can be swapped between auto and manual.

Temperature setting

- Here the target temperature for the extraction fan (main control) can be changed from the curve. (*To the right is the calculated value.*)

Bandwidth

- If the ventilation can increase, here can be filled in how many degrees the ACM should go from minimum to maximum ventilation.

Growth curve minimum

- This value is extracted from the curve and can be adjusted through an offset here. (*To the right is the calculated value*)

Growth curve maximum


- This value is extracted from the curve and can be adjusted through an offset here. (*To the right is the calculated value*)

House temperature

- Measured house temperature. (If several temperature sensors are assigned, this value is the average temperature!)

Calculated ventilation

- Based on the measured temperature and temperature setting, the actual ventilation value is determined.

22 Extraction fan F3			
Extraction fan	auto		
Temperature setting	+00.0°C	31.3°C	
Bandwidth	01.0°C		
Growth curve minimum	+00.0%	18.5%	
Growth curve maximum	+00.0%	54.1%	
House temperature	20.7°C		
Calculated ventilation	18.5%		
Current ventilation	0.0%		
During rinse cycle	10%		
1 Reduction			
10:37	24 December 2012		Day 3

Current ventilation

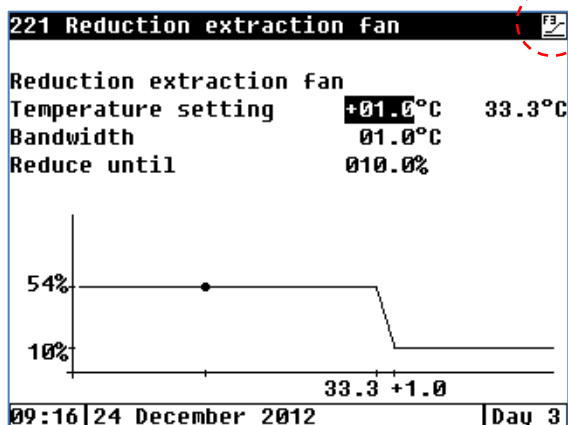
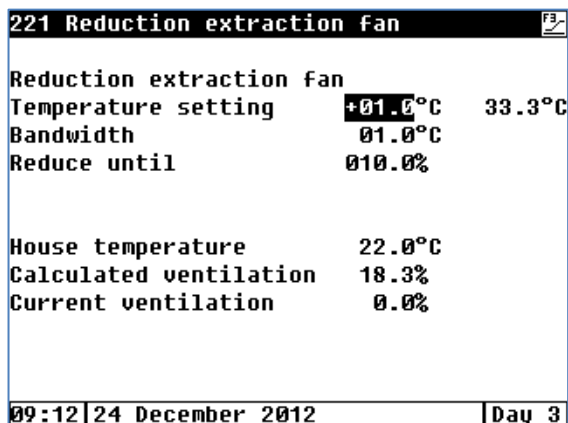
- Reading of the measuring fan.
(If the alarm for this is off, this is illustrated with a symbol of a measuring fan with a cross through it, right along the measured value.) **The computer operates on the value calculated without measuring fan.**

During rinse cycle

- Here the desired position for the extraction fan during "rinsing" can be set. (In case this value is set to 0%, the extraction fan will stop during rinsing. It then might be possible that some water will enter the house by the negative pressure inside the house.)

1 Reduction

- **This menu is only visible if it is activated in the installation menu.**



Main menu => [221]

- [2] Climate Controls
 - [2] Extraction fan
 - [1] **Reduction extr. fan**

Temperature setting

- Here you set after how many degrees, the Clima Manager has to decrease the ventilation again.
Left is the offset (the horizontal part)
Right is the calculated temperature.

Bandwidth

- This is how fast (in how many degrees) the ventilation is reduced to the absolute minimum value entered below.

Reduce until

- Theoretically, the Clima⁺ unit might decrease to 0% ventilation, but this could cause drafts created by the opening of the Clima⁺ unit. Therefore it might be better to leave the Clima⁺ unit running for example on 10% continue, to prevent air coming back into the house via the extraction trajectory.

House temperature

- Measured house temperature. *(If several temperature sensors are assigned, this value is the average temperature!)*

Calculated ventilation

- Based on the measured temperature and temperature setting, the actual ventilation value is determined.

Current ventilation

- Reading of the measuring fan.
(If the alarm for this is off, this is illustrated with a symbol of a measuring fan with a cross through it, right along the measured value.) *The computer operates on the value calculated without measuring fan.*

Main menu: 2 Climate controls

23 Intake fan			
Intake fan	auto		
Frost guard	10.0°C		
Reduction	33.0%/°C	0.0%	
Reduce until	0.0	0.0%	
Current temperature	18.5°C		
Extraction temperature	20.8°C		
Calculated ventilation	55.0%		
09:20 24 December 2012 Day 3			

Main menu => [23]

- [2] Climate Controls
- [3] Intake fan

Usually there is no separate air measuring unit provided for the air intake fan. The control of the inlet fan follows the exhaust fan, which is leading.

Intake fan

- Like in the manual menu [F1], also here the control for the intake fan can be changed from AUTO to HAND and back.

Current temperature

- This is the measured air intake temperature, fresh air through the Clima⁺ unit which goes into the house.

Extraction temperature

- This is the measured air temperature below the extraction fan. (optional)

Calculated ventilation

- Based on the measured temperature and temperature setting, the actual ventilation value is determined. (*This follows the extraction control.*)

Frost protection

In case a temperature sensor is installed below the extraction fan, this can work as a frost protection and take care that the heat exchanger will not freeze completely. When that happens the extraction trajectory will be blocked with ice and no air can go out any more.

In this example the speed of the intake fan will be reduced when the temperature below the extraction fan reaches 10,0 °C or less. The fan will be reduced with 33% per degrees of Celsius; which is equal to a bandwidth of 3,0 degrees. By taking less cold air through the Clima⁺ unit then warm air leaves through the unit, the heat exchanger will not freeze.

Main menu: 2 Climate controls

24 Valves ACU		
1	ACU-valve	
2	Bypass ACU	
3	Air inlet valve	
09:23 24 December 2012 Day 3		

Main menu => [24]

- [2] Climate Controls

[4] Valves ACU

In case there are valves installed inside the Clima⁺ unit, they will be assigned in the installer settings and here visible.

[1] ACU-valve

=> The *ACU-valve* is a valve that can close the fresh incoming air off through the heat exchanger. This will be the case if there is also a heater inside the Clima⁺ unit.

[2] Bypass ACU

=> The *Bypass ACU* valve, can be used in warm days, to bypass the incoming fresh air from the heat exchanger, to prevent it from extra heating, before entering the house.

[3] Air inlet valve

=> The *Air inlet valve* is a valve after the intake fan and will push the fresh intake air into the ridge of the house. This valve is part of the ***louvrebox***.

Main menu: 2 Climate controls

241 ACU-valve	
ACU-valve	auto
Extraction ventilation	18%
Current position	51%
09:26 24 December 2012 Day 3	

Main menu => [241]

- [2] Climate Controls
 - [4] Valves ACU
 - [1] **ACU-valve**

ACU-valve

- Also here the ACU valve can be set to HAND or AUTO.

Extraction ventilation

- This is the calculated value for the extraction ventilation.

Current position

- Read out of the position of the ACU-valve..

242 Bypass ACU	
Bypass ACU	auto
Growth curve temperature	36.3°C
Bandwidth	04.0°C
Growth curve minimum	0%
Growth curve maximum	58%
House temperature	20.9°C
Current cooling	0%
Current position	5%
1 Frost guard	
09:27 24 December 2012 Day 3	

Main menu => [242]

- [2] Climate Controls
 - [4] Valves ACU
 - [2] **Bypass ACU**

Bypass ACU

- Also here the bypass ACU valve can be set to HAND or AUTO.

Growth curve temperature

- Start value according to its own curve.

Bandwidth

- Control Band in how many degrees the valve position goes from minimum to maximum position.

Growth curve minimum

- Minimum opening according the curve.

Growth curve maximum

- Maximum opening according the curve.

House temperature

- Measured house temperature. *(If several temperature sensors are assigned, this value is the average temperature!)*

Current cooling

- Percentage how far the bypass ACU valve is open.

Current position *(only visible when assigned as a frost protection)*

- In case the frost protection is active, this will show the actual position according the frost protection control.

2421 Frost guard	
Bypass ACU	
Frost guard	05.0°C
Bandwidth	04.0°C
Minimum position	005%
Maximum position	085%
Extraction temperature	20.8°C
Current heating	5%
Current position	5%
09:30 24 December 2012 Day 3	

Main menu => [2421]

- [2] Climate Controls
 - [4] Valves ACU
 - [2] Bypass ACU
 - [1] **Frost guard**

Frost guard

- If the temperature measured below the extraction fan reaches this value, the *Bypass ACU* valve will start to open.

Bandwidth

- Control Band in how many degrees the valve position goes from minimum to maximum position.

Minimum position

- Minimum position of the Bypass valve.

Maximum position

- Maximum position of the Bypass valve.

Extraction temperature

- Measured temperature below the extraction fan. (optional)

Current heating

- Actual position of the heating control.

Current position

- Actual position of the Bypass valve.

243 Air inlet valve	
Air inlet valve	auto
Intake ventilation	55%
Calculated flap opening	55%
09:31 24 December 2012 Day 3	

Main menu => [243]

- [2] Climate Controls
 - [4] Valves ACU
 - [3] **Air inlet valve**

Air inlet valve

- Also here the bypass ACU valve can be set to HAND or AUTO.

Intake ventilation

- Calculated value of the intake fan.

Calculated flap opening

- Actual position of the intake flap of the louvrebox.

Main menu: 2 Climate controls

25 Circulation fans		
Circulation fans	auto	
Ventilation	050%	50%
Control ventilation	50%	
09:22 24 December 2012 Day 3		

Main menu => [25]

- [2] Climate Controls
- [5] Circulation fans

Circulation fans

- Like in the manual menu, also here the control for circulation fans can be swapped between auto and manual.

Ventilation

- On the left is the set value or the value calculated from its own curve.
On the right is the calculated value.

Control ventilation

- Actual control of the circulation fans.

Main menu: 2 Climate controls

26 Heating		
1 Heater block		
2 Bypass heater		
3 Recirculation heater		
09:35 24 December 2012 Day 3		

261 Heater block		
Heater block	auto	
Temperature setting	-1.0°C	30.3°C
Current temperature	20.9°C	
Current heating	on	
Intake ventilation	55.0%	
09:37 24 December 2012 Day 3		

262 Bypass heater		
Bypass heater	auto	
Temperature setting	20.0°C	20.0°C
Bandwidth	5.0°C	
Current temperature	-99.9°C	-99.9°C
Temperature difference	0.0°C	
Current position	80%	
Current heating	on	
09:40 24 December 2012 Day 3		

Main Menu => [26]

- [2] Climate Controls
- [6] Heating

[1] Heater block

=> Settings for the heater.

[2] Bypass heater

=> The bypass heater is a valve that can bridge the heater when not in use.

[3] Recirculation heater

=> The recirculation heater valve is a valve that recirculates house air back to the intake fan. This control can be used with an extra air measuring unit. In this way the house air can be reheated.

Main menu => [261]

- [2] Climate Controls
- [6] Heating
- [1] Heater block

Heater block

- If needed, here the heater can be switched off.

Temperature setting

- The heating works in its own curve, which is linked to the house curve. If needed, an offset can be entered here.
- On the right, the calculated value is displayed.

Current temperature

- Current house temperature.

Current heating

- Status of the heater. (On or off)

Intake ventilation

- Percentage of air through the intake fan.

Main control => [262]

- [2] Climate Controls
- [6] Heating
- [2] Bypass heater

Bypass heater

- The bypass valve can be set to HAND.

Temperature setting

- At this setpoint, the bypass should open.

Bandwidth

- Temperature band to open the bypass.

Current temperature 1 & 2

- Temperature **BEFORE** and **AFTER** the heater block.

Temperature difference

- Temperature difference between the two sensors.

Current position

- Current opening of the bypass heater valve.

Current heating

- Current status of the heater.

263 Recirculation heater		
Recirculation heater	auto	
Intake fan	55.0%	
Extraction fan	18.3%	
Calculated ventilation	37%	
09:43	24 December 2012	Day 3

Main menu => [263]

- [2] Climate Controls
 - [6] Heating
 - [3] **Recirculation heater**

Recirculation heater

- The recirculation valve can be set to HAND.

Intake fan

- Percentage of the air through the intake fan.

Extraction fan

- Percentage of air through the extraction fan.

Calculated ventilation

- Calculated control of the recirculation valve.

Main menu: 2 Climate controls

27 Miscellaneous controls		
Current RH	53%	
RH-compensation	070%	
Factor	1.0	0%
09:45	24 December 2012	Day 3

Main menu => [27]

- [2] Climate Controls
 - [7] **Miscellaneous controls**

Current RH

- Measurement of the actual Relative Humidity (RH)

RH-compensation

- From this percentage onwards, the ventilation will be increased.

Factor

- RH compensation factor. In the installation settings it can be set to be absolute or relative.

It's also possible only to measure RH, without any compensations to be activated.

Main menu: 2 Climate controls

```

28 Growth curves climate controls

Growth curves          on
Day                    003      3
Corr.                  +00

1 House temperature
2 Extraction fan
3 -----
4 Bypass ACU
5 Circulation fans
6 Heater block

09:48 24 December 2012 Day 3
  
```

Main menu => [28]

- [2] Climate Controls

[8] **Growth curves clim. controls**

As in screen [21] House status (= F2), also here all the curves can be switched ON or OFF. Also the current day number can be changed from here.

If the growth curves are switched off, the CM works with default settings.

At the sub menus 1 through 6, each curve can be set individually.

```

281 Growth curve house temperature F3
Growth curve temperature on
Number of points         07

Point    Day (3)    Temp.
1         001       33.0°C
2         007       28.7°C
3         014       27.2°C
4         021       25.0°C
5         028       23.2°C
6         035       21.0°C
7         042       18.0°C

09:50 24 December 2012 Day 3
  
```

Main menu => [281]

- [2] Climate Controls

[8] Growth curves climate controls.

[1] **Growth curve house temp.**

This curve is the main curve of the Clima Manager. This must be copied from the existing house climate computer. This allows the Clima Manager to work together with the house climate computer.

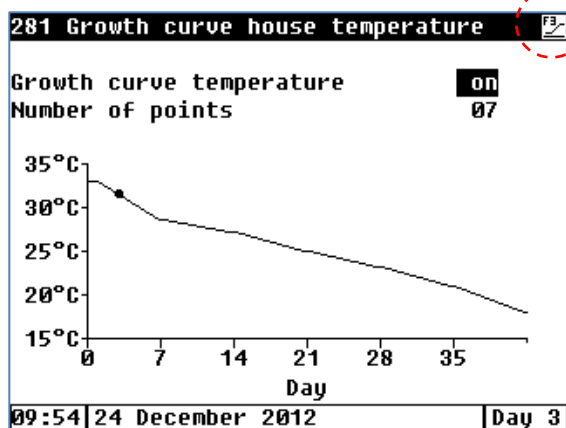
Growth curve temperature

- Here each curve can be individually switched ON or OFF.

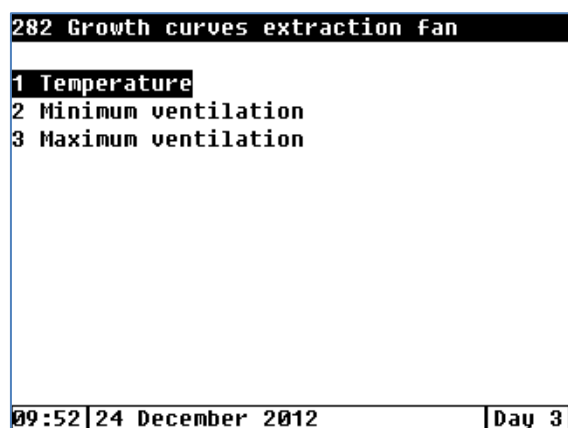
Number of points

- Here the required number of break points can be entered. (*Max. 15 break points*)

Subsequently, behind each breakpoint number, the curve day and corresponding house temperature can be entered.

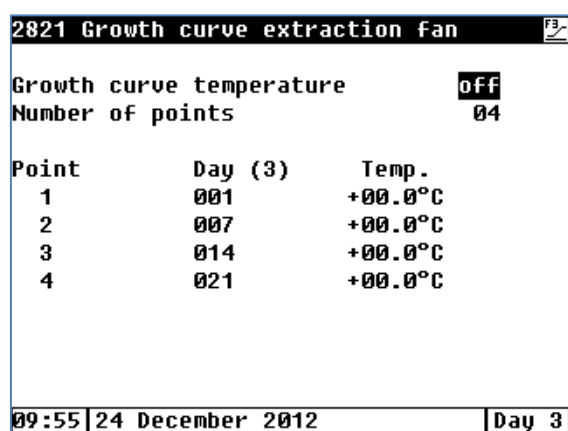


By pressing F3, the entered curve can be displayed in a graph. By the means of this it's easier to spot any typing errors.



Main menu => [282]

- [2] Climate Controls
 - [8] Growth curves climate controls
 - [2] **Growth curves extract. fan**



Main menu => [2821]

- [2] Climate Controls
 - [8] Growth curves climate controls
 - [2] Growth curves extraction fan
 - [1] **Temperature**

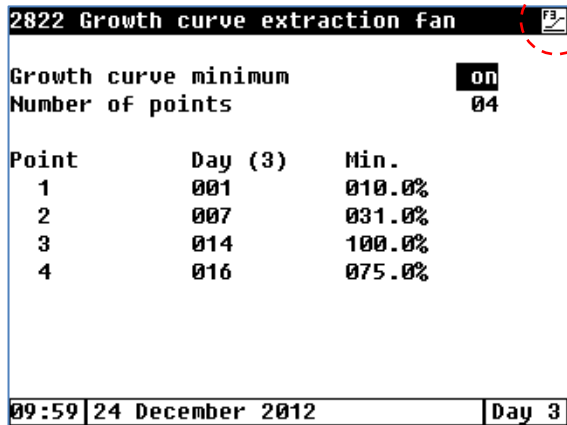
Growth curve temperature

- Here each curve can be individually switched ON or OFF.

Number of points

- Here the required number of break points can be entered. (*Max. 15 break points*)

Subsequently, behind each breakpoint number, the curve day and corresponding offsets relative to the house temperature can be entered.



Main menu => [2822]

- [2] Climate Controls
 - [8] Growth curves climate controls
 - [2] Growth curves extraction fan
 - [2] **Minimum ventilation**

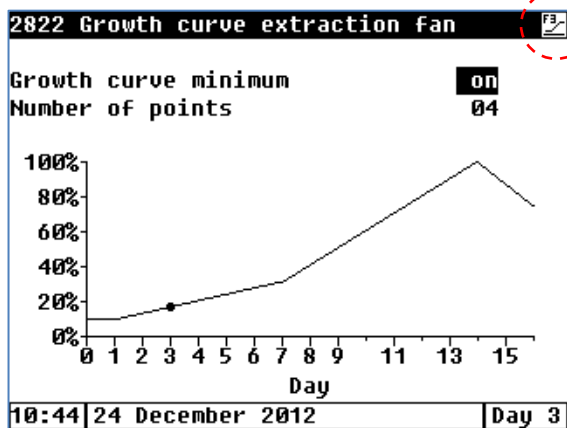
Growth curve minimum

- Here each curve can be individually switched ON or OFF.

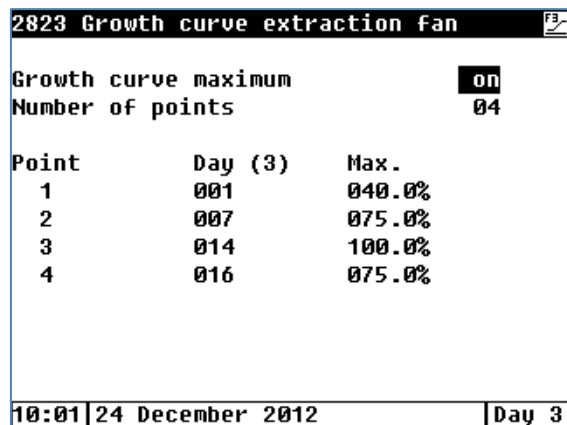
Number of points

- Here the required number of break points can be entered.

Subsequently, behind each breakpoint number, the curve day and corresponding minimum ventilation settings can be entered.



By pressing F3, the entered curve can be displayed in a graph. By the means of this it's easier to spot any typing errors.



Main menu => [2823]

- [2] Climate Controls
 - [8] Growth curves climate controls
 - [2] Growth curves extraction fan
 - [2] **Maximum ventilation**

Growth curve maximum

- Here each curve can be individually switched ON or OFF. In case the Clima Manager only needs to work according a minimum curve, then the setting "min" should be selected and the maximum curve will follow the minimum curve settings.

Number of points

- Here the required number of break points can be entered. (*Max. 15 break points*)

Subsequently, behind each breakpoint number, the curve day and corresponding maximum ventilation settings can be entered.

Main menu: 2 Climate controls

29 Alarm climate controls		
1	House temperature	
2	Extraction temperature	
3	Intake temperature	
4	Extraction ventilation	
5	-----	
6	Bypass heater temperature	
7	-----	
8	Miscellaneous	
9	Outside temperature	
10:24	24 December 2012	Day 3

Main menu => [29]

- [2] Climate Controls
- [9] Alarm climate controls

In this menu system alarm conditions can be set for each control separately.

291 Alarm house temperature			
Alarm temperature		on	
Minimum alarm limit	-10.0°C	21.3°C	
Maximum alarm limit	+10.0°C	40.0°C	
Absolute alarm limit	40.0°C		
House temperature	20.8°C		
Temperature setting	31.3°C		
Outside temperature	4.6°C		
Alarm status	Temperature too low		
10:12	24 December 2012	Day 3	

Main menu => [291]

- [2] Climate Controls
- [9] Alarm climate controls
- [1] Alarm house temperature

Alarm temperature

- Here the alarm for the house temperature can be switched on or off. *(In case the house curve is not set, this should be switched off to prevent any false alarm.)*

Minimum alarm limit

- Lowest alarm limit is -20°C below the set point of the house temperature.

Maximum alarm limit

- Highest alarm limit is +20°C above the calculated set point for the house temperature.

Absolute alarm limit

- Absolute maximum alarm limit.

House temperature

- (Average) house set point..

Temperature setting

- Set point house temperature.

Outside temperature

- Measured outside temperature.

Alarm status

- Actual status of this alarm control. *In this example an alarm is active for this control!*



When the outside temperature gets higher than the set point house, the maximum alarm limit will also move up.

292 Alarm extraction temperature			
Alarm temperature	on		
Minimum alarm limit	10.0°C	10.0°C	
Maximum alarm limit	40.0°C	40.0°C	
Absolute alarm limit	40.0°C		
Current temperature	20.8°C		
Outside temperature	4.6°C		
Alarm status	No alarm		
10:15	24 December 2012	Day 3	

Main menu => [292]

- [2] Climate Controls
 - [9] Alarm climate controls
 - [2] Alarm extract. temperature

Alarm temperature

- Here the alarm for the temperature below the extraction fan can be switched on or off.

Minimum alarm limit

- Absolute minimum value for the temperature to reach below the extraction fan.

Maximum alarm limit

- Absolute maximum value for the temperature to reach below the extraction fan.

Absolute alarm limit

- Absolute maximum alarm limit.

Current temperature

- Actual measurement of the temperature sensor below the extraction fan.

Outside temperature

- Measured outside temperature.

Alarm status

- Actual status of this alarm control.

293 Alarm intake temperature			
Alarm temperature	on		
Minimum alarm limit	10.0°C	10.0°C	
Maximum alarm limit	40.0°C	40.0°C	
Absolute alarm limit	40.0°C		
Current temperature	18.5°C		
Outside temperature	4.6°C		
Alarm status	No alarm		
10:20	24 December 2012	Day 3	

Main menu => [293]

- [2] Climate Controls
 - [9] Alarm climate controls
 - [3] Alarm intake temperature

Alarm temperature

- Here the alarm for the intake temperature sensor can be switched on or off.

Minimum alarm limit

- Absolute minimum value for the intake temperature.

Maximum alarm limit

- Absolute maximum value for the intake temperature.

Absolute alarm limit

- Absolute maximum alarm limit.

Current temperature

- Actual measurement of the intake temperature sensor.

Outside temperature

- Measured outside temperature.

Alarm status

- Actual status of this alarm control.

294 Alarm extraction ventilation		
Measuring fan	on	☞
Current ventilation	0%	
Calculated ventilation	18%	
Minimum alarm limit	8%	
Maximum alarm limit	28%	
Alarm status Ventilation too low		
10:26	24 December 2012	Day 3

Main menu => [294]

- [2] Climate Controls
 - [9] Alarm climate controls
 - [4] Alarm extract. ventilation

Measuring fan

- Here the alarm for the measuring fan can be switched on or off. *(This can be done when the measuring fan becomes faulty.)*

Current ventilation

- The actual measurement of the measuring fan.

Calculated ventilation

- The calculated ventilation at this moment.

Minimum alarm limit

- When the actual measurement becomes below this limit, there will be alarm.

Maximum alarm limit

- When the actual measurement becomes above this limit, there will be alarm.

Alarm status

- Actual status of this alarm control.
(In this example this control gives an alarm; the calculated value is 18%, while the measured value equals 0%!)

294 Alarm extraction ventilation		
Measuring fan	off	☞
Current ventilation	0%	
Calculated ventilation	18%	
Minimum alarm limit	8%	
Maximum alarm limit	28%	
Alarm status Ventilation too low		
10:27	24 December 2012	Day 3

In case the alarm for the measuring fan is switched off, a cross will be displayed through the fan symbol, to indicate that the alarm is switched off and the control will be done without measuring fan



```

298 Alarm miscellaneous controls

1 ---
2 RH

10:29 24 December 2012 Day 3

```

Main menu => [298]

- [2] Climate Controls
 - [9] Alarm climate controls
 - [8] **Alarm miscel. controls**

In case CO2 or RH is measured, here the alarm settings can be altered.

```

2982 Alarm RH

Alarm RH on

Minimum alarm limit 020%
Maximum alarm limit 100%

Current RH 53%

Alarm status No alarm

10:32 24 December 2012 Day 3

```

Main menu => [2982]

- [2] Climate Controls
 - [9] Alarm climate controls
 - [8] Alarm miscel. controls
 - [2] **Alarm RH**

Alarm RH

- Here the alarm for the house RH can be switched on or off.

Minimum alarm limit

- At this value there will be an alarm.

Maximum alarm limit

- At this value there will be an alarm.

Current RH

- Actual RH measurement.

Alarm status

- Actual status of this alarm control.

```

299 Alarm outside temperature

Alarm outside temperature on

Outside temperature 4.6°C

Alarm status No alarm

10:34 24 December 2012 Day 3

```

Main menu => [299]

- [2] Climate Controls
 - [9] Alarm climate controls
 - [9] **Alarm outside temperature**

Alarm outside temperature

- Here the alarm for the outside temperature alarm can be switched on or off.

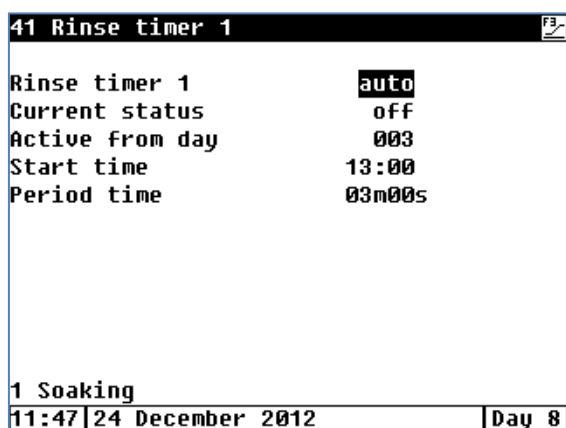
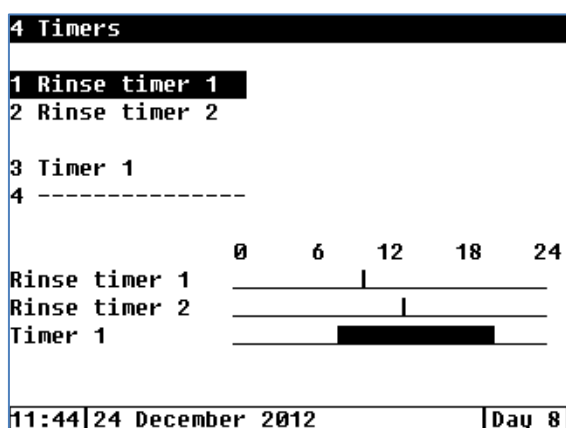
Outside temperature

- Measured outside temperature.

Alarm status

- Actual status of this alarm control.

Main menu: 4 Timers



It's also possible to work with a "skip-a-day" program. This needs to be activated in the installer settings.

The same applies for rinse timer 2, only the start time needs to be set exactly to the start time + duration of rinse timer 1

The rinse timers should be used if the Clima unit has a rinsing system. The moment a rinse timer is running, the extraction fan will start to run on a preset speed throughout the rinsing period. This setting can be done at [22]

Extraction fan.

The inlet fan percentage is then calculated according to value, unless it has its own air measuring unit.

Main menu => [41]

- [4] Timers
 - [1] Rinse timer 1

Rinse timer 1

- Like in the manual menu, also here the status for the rinse valve can be swapped between auto and manual.

Current status

- Readout if the timer is active.

Active from day

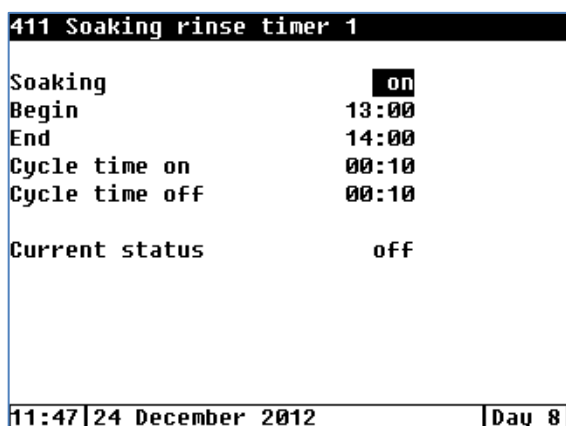
- The timer will start to work from this day onwards. This choice can be enabled or disabled from the installer menu.

Start time

- Start time when this rinse valve should start.

Period time

- Duration of rinse timer 1 when started.



Main menu => [411]

- [4] Timers
 - [1] Rinse timer 1
 - [1] Soaking rinse timer 1

Soaking


- Possibility to activate the soaking. Here this can be switched on or off.

Begin / End

- Beginning and end time of the cleaning process.

Cycle time on / off

- Rinse time and pause time during the cleaning process.

43 Timer 1 			
Timer 1	auto		
Current status	on		
Number of periods	02		
Per.	Begin		End
1	08:00	-	20:00
2	21:00	-	22:00
11:56 24 December 2012 Day 3			

Main menu => [41]

- [4] Timers
- [3] Timer 1

Timer 1

- Here the timer can be set to HAND or AUTO.
(This is not possible in the manual control menu F1)


Current status

- Readout if the timer is active.

Number of periods


- Here you can indicate how many starting times / periods need to be entered.





By pressing the F3 button, the entered time periods can be displayed in a graph.

43 Timer 1 			
Timer 1	auto		
Current status	on		
Number of periods	02		
Per.	Begin		End
1	08:00	-	20:00
2	21:00	-	22:00
11:57 24 December 2012 Day 3			

In case a new timer period needs to be entered in between two periods, this can be done easily without first manually moving the times.

- Go to the line where the new time period needs to be inserted and press the 'enter' button.

43 Timer 1 			
Timer 1	auto		
Current status	on		
Number of periods	03		
Per.	Begin		End
1	08:00	-	20:00
2	21:00	-	22:00
3	21:00	-	22:00
12:03 24 December 2012 Day 3			

- When the box is open as in this example, press (and hold) the F1 button. Then also press the + button (= arrow up) at the same moment.  + 
- After doing that, an extra line will be inserted and can be set with the correct times.
- To remove a line works the same, except by using the F1 and the - button.  + 

Main menu: 5 Info

5 Info		
1 Log		
2 Growth curves		
3 -----		
4 Timers		
10:39 24 December 2012 Day 3		

This menu contains all the histories. The stored data from the last period can be examined here.

51 Log					
Days ago 0					
24/12/2012	Aug.	Min.	Time	Max.	Time
House set.	21.8	20.0	0:00	31.3	8:03
House tmp.	21.7	19.5	12:48	22.0	0:00
Tmp.intake	18.9	18.4	13:09	19.0	0:00
Outside	4.7	4.6	8:27	4.7	0:00
Unt.extr.	40%	0%	13:33	55%	8:51
Circulat.	50%	-0%	13:33	50%	0:00
10:41 24 December 2012 Day 3					

Main menu => [51]

- [5] Info
 - o [1] Log

Here the status of the Clima+ Unit can be viewed back for the past 60 days.

52 Overview growth curves					
Day (3)	1	15	29	43	57
House tmp.	33.0	26.9	22.9	18.0	18.0
Min.extr.	10	88	75	75	75
Max.extr.	40	88	75	75	75
Tmp.bypass	+5.0	+5.0	+5.0	+5.0	+5.0
Min.bypass	0	6	15	15	15
Max.bypass	50	100	100	100	100
10:43 24 December 2012 Day 3					


Main menu => [52]

- [5] Info
 - o [2] Overview growth curves

Here an overview of the set curves can be seen.

Main menu: 6 Alarm

6 Alarm status			
Main alarm	on	Test	no
⌚ Off	no		
Alarm code No alarm			
Control			
1 Latest alarms			
2 External alarms			
12:22 24 December 2012			Day 3
Main alarm	on	Test	no
⌚ Off	yes	29m44s	

This alarm menu can also directly been approached through the red alarm button. 

Main Alarm

- The complete alarm of the Agro Clima Manager can here be switched ON or OFF.

Test

- The alarm can easily being tested by choosing "yes". During 10 seconds the alarm contact will be switched and should give an alarm to the alarm system.
- If there is an actual alarm, this can be temporarily switched off. After 30 minutes the alarm will be activated again if still not solved.

Alarm Code

- When an alarm occurs, here it will tell which alarm has been occurred.


Control

- When an alarm occurs, here it will tell which control has the alarm.

1 Latest alarms house		
Alarm 0	24 December 2012	11:33
Alarm code	Temperature too low	
Control	House temperature	
Alarm 1	24 December 2012	11:16
Alarm code	Temperature too low	
Control	House temperature	
Alarm 2	24 December 2012	10:54
Alarm code	Alarm	
Control	Control cabinet	
11:33 24 December 2012 Day 2		

[1] Latest alarms

- In this sub-menu the last five occurred alarms will be stored.
 - ⇒ In case the time at **Alarm 0** is equal the actual time, the alarm is still active.
 - ⇒ In case the time at **Alarm 0** is **not** equal the time, then this is the time the last alarm (= **Alarm 1**) has been solved.

21 Control cabinet	
Control cabinet	loud 
Input	closed
Alarm status	No alarm
11:09 24 December 2012 Day 8	

[21] External alarm

- In this sub-menu settings can be made for external alarms, like in this example the electrical switchbox.
- In total 4 external alarms can be activated. *(If there are enough digital inputs available in the switchbox)*
- The name of every external alarm is free to change.

Control cabinet

- Here it can be selected how an alarm should be given:
 - LOUD: Alarm message in display and alarm contact switched
 - SILENT: Alarm message only in display
 - OFF: External alarm switched off.

Main menu: 7 System

7 System	
Device	Clima Manager
Software version	1.12
Software date	17/09/2012
Language / Taal	
Sprache / Langue	
Sproch / Język	ENG
1 Date/Time	
2 Display	
11:39 24 December 2012	
Dau 8	

This menu contains general information about the Clima Manager.

Software version

- The version of this computer program.

Software date

- Release date of this computer program version.

Language

- Here the language of the Clima Manager can be changed. (Dutch, German, French, Danish, Polish and English)

The language can be changed in any given menu, with the following key combination: [►] + F1

71 Date/Time		
Time	11:40	
Year	2012	
Month	12	
Day	24	
11:40	24 December 2012	Day 8

Main menu => [71]

- [7] System
- [1] **Date / Time**

First day of the week

- Enter what day a new week starts.

Beginning new day

- Enter what time of the day, the history data of "today" to "yesterday" should be passed.

72 Display		
Contrast		48
Brightness		100%
on-time		300s
Cursor left		yes
11:42 24 December 2012		Day 8

Main menu => [72]

- [7] System
- [2] **Display**

Contrast

- Setting for the readability of the display.

brightness

- Setting for the brightness of the display.

On- time

- If after this set time, no buttons are pressed, the display view will switch to the overview screen.

Cursor left

- This choice will determine where the cursor is normally. (Left or right)

OFF- AUTO SELECTION KNOB

A fan OFF / AUTO knob is attached to the electrical box.

When set to AUTO, the intake and extraction fan both are controlled by the Clima Manager, according to the programmed ventilation curve.

When the knob is set to OFF, the intake and extraction fan both will be stopped.

A red lamp in the button lights up when the electrical box has a fault.



LIVE STOCK!

After turning off the fans, cover the openings of the air measuring unit and the inlet fan off. This prevents air leakage that causes draft on the animals.



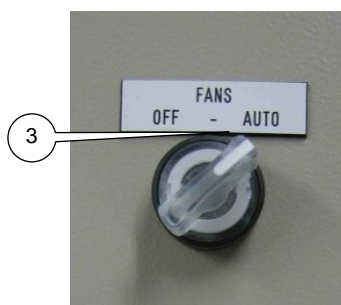
LIVE STOCK!

After turning off the fans, make sure that the normal house ventilation is set to the necessary amount of ventilation to be provided.

STARTING THE SYSTEM

Follow the below procedure to start up the Clima+ unit. This is a general description for the most common use of the Clima+ unit:

1. Remove the cover from the air measuring unit.
2. Remove the cover from the intake fan.
3. Set the selection knob on the switchbox to AUTO.
4. Enable the alarm, see [on/off alarm](#) further on in this chapter.
5. When no ventilation curve is present, or a new ventilation curve is necessary, program a ventilation curve.
6. Put the Clima manager "in use" at button F2.
7. Now the Clima+ unit is running.
8. Check the normal house ventilation for correct functioning.



DANGER!

Although a lot of safety measures are built into the system, Agro Supply cannot guarantee that no dangerous situations will occur. Before you start the system, make sure no persons are in danger.



LIVE STOCK!



Make sure the normal house ventilation switches on when the Clima+ unit has reached its maximum capacity. Make sure an alarm goes off when the Clima+ unit has a failure.

MANUAL CONTROL CIRCULATION FANS

The circulation fans are used to circulate the air inside the house. Since there is a constant amount of air inside the house, normally the speed of the circulation fans can be kept constant.

Too much circulation causes draught on the birds; too little circulation causes temperature differences in the house, both resulting in an irregular distribution of the flock in the house.

Normally it is not necessary to change the speed of the circulation fans during the cycle, so it is not necessary to program a circulation fans curve. Just set the circulation fans into the manual mode, enter a circulation fan speed and adjust this until the climate inside the house is constant over the complete surface of the house.

	TIP! Using smoke can help to visualize the distribution of fresh air through the house.
	TIP! A regular distribution of the flock over the complete surface of the house is an indication for the correct distribution of fresh air through the house.

ALARM ON / OFF

Both the Clima Manager and the electrical cabinet are able to generate an alarm.

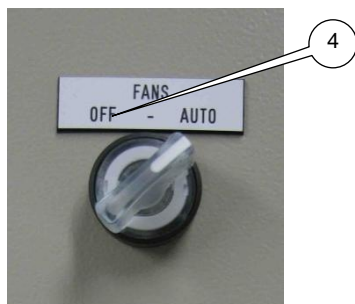
The air measuring unit installed in the exhaust opening of the house measures the amount of ventilation and sends a signal to the Clima Manager. When the difference in measured value and calculated value is too big, the computer will generate an alarm. The alarm LED on the Clima Manager switches ON. After pressing the alarm button, on the display, an alarm code appears. See the [trouble-shooting chapter](#) further on in this manual for the possible alarms.

The electrical cabinet generates an alarm when one of the ventilators is stopped. The light inside the selection knob switches ON.

Since the heat exchanger provides the minimum amount of ventilation (at the first days of a cycle it provides all ventilation) it is very important that an alarm goes off when the heat exchanger has a failure (for whatever reason). Because of this normally the alarm signals of the Clima Manager and electrical cabinet are connected to an external alarm device, like for example a beeper or the normal house ventilation controller.

To enable this connection (sending a signal to an external alarm device) follow below steps:

1. Press alarm button.
2. The main alarm should be set to "ÖN".



STOPPING THE CLIMA+ UNIT

When for example in the summer, the temperature inside the house raises, it may be necessary to stop the heat exchanger. It's not recommended to switch the Clima manager and switchbox OFF.

Follow below steps to stop the heat exchanger:

1. Press alarm button.
2. Switch off the main alarm.
3. Push the "F2" button and set the house status to: "not in use"
4. Stop the heat exchanger by switching OFF the fans with the selection knob on the electrical cabinet.



LIVE STOCK!

When the birds are heavier during the last days of a cycle, or during very warm weather, the Clima+ may be stopped.

Raise the minimum ventilation setting of the house ventilation to compensate the ventilation loss because of the stopped Clima+ unit.



When the heat exchanger is stopped, but birds are still present in the house, it is recommended to cover the openings of the air measuring unit (5, exhaust opening) and the intake fan (6).

The covers prevent air leaks causing draught on the birds.

There are 3 types of covers available:

Brown covers for the round 710 mm.

Blue covers for the round 820 mm.

White covers for the round 920 mm.



After stopping the Clima+ unit immediately start with the cleaning of the outside of the air tubes! In case a rinse installation is installed, the "cleaning" status could be activated. See chapter maintenance for details.



4. MAINTENANCE

GENERAL

Only professionals who are familiar with the installation and its operation may perform maintenance, cleaning, repairs and replacement of defective or worn out parts.

When during maintenance questions arise regarding the condition of the system, consult your Agro Supply dealer.

In case of difficult or special repairs consult your Agro Supply dealer.

Inspections must be carried out before, during and after operation of the machine. Mechanical flaws must be repaired upon discovery.

The operator is responsible for noticing and locating abnormal noises and other unusual signs indicating flaws. If the operator cannot locate the flaw, he must stop the installation and inform his superior.

Take preventive actions against vermin as they may cause failures to the electrical cables and such.







SAFETY REGULATIONS

Before starting operation, cleaning, maintaining the system or before remedying breakdowns first read the chapters [Introduction](#) and [Safety](#).


GENERAL MAINTENANCE PROCEDURE

Before actually starting to maintain the system, first follow below steps:

- Switch off the system and secure it against accidental switching on.
- Check the condition of the system during cleaning.

	<p>CAUTION!</p> <p>When using warm water to moisten a cloth, make sure the temperature of the water is below 45°C. Above this temperature it is possible to incinerate body parts. When hosing down don't aim water jet towards other persons.</p>
	<p>ATTENTION!</p> <p>Do not use abrasive cleaning detergents or utensils on non-longwearing parts.</p>
	<p>ATTENTION!</p> <p>Do not use aggressive cleaning products. Use cleaning product with a PH value between 6 and 8.</p>
	<p>LIVE STOCK!</p> <p>We recommend to use a mild disinfectant such as Macrodes during cleaning.</p>
	<p>ATTENTION!</p> <p>Hose down only those systems that are designed for hosing down. Use a jet of water from a distance of at least 1 meter, with a maximum water pressure of 25 bars and a maximum water temperature of 60°C. Do not hose down bearings and electrical parts.</p>
	<p>ATTENTION!</p> <p>Do NOT clean the electrical cabinet with water.</p>

Perform the maintenance according the advices and intervals as described in the [Preventive maintenance instructions](#) further on in this chapter.

	<p>TIP!</p> <p>The maintenance advices and intervals described in this manual are general. For your specific situation the maintenance schedule may need alteration. During the first months observe the performance of the system and the influence of contamination on the system and (if necessary) change the maintenance methods and schedules.</p>
---	---

AFTER MAINTENANCE

When the maintenance duties are finished, ensure the following:

- All fasteners are secure.
- All safety covers are in place and safety doors are closed.
- All tools and cleaning utensils are removed from the system.

PREVENTIVE MAINTENANCE INSTRUCTIONS

FILTERS

Check the filters daily for contamination. In case of contaminated filters replace them with a spare set of clean filters.

Contaminated filters can be washed and reused.



LIVE STOCK!

Clogged filters may result in intake ventilator overload, which stops the ventilation.



FILTERS REPLACEMENT

Follow below procedure to replace the filters:

1. Loosen the filter(s) from the filter frame.
2. Remove the filter(s) from the filter frame.
3. Replace the clean filter(s) in the reverse order of the removal.





AIR TUBES

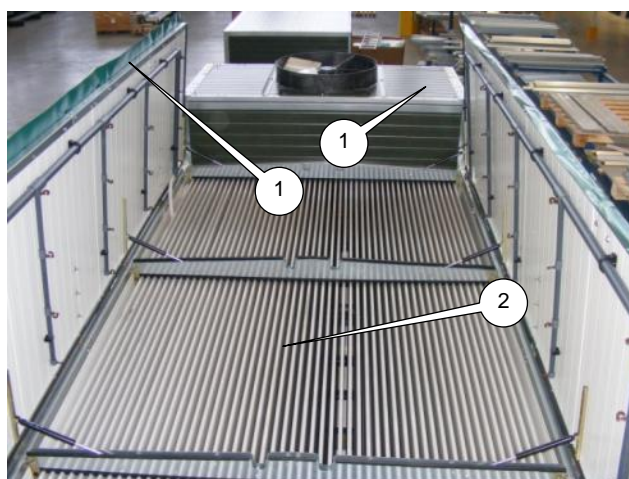
As soon as the Clima+ unit is switched off, dust sticking to the outside of the air tubes starts to dry out. Because of this, the outside of the air tubes must be cleaned immediately after switching off the Clima+ unit.



LIVE STOCK!

A lot of dust sticking to the outside of the air tubes results in less heat transfer, higher energy consumption and may result in intake ventilator overload which stops the ventilation.

AIR TUBES CLEANING



Follow below procedure to clean the outside of the air tubes:

1. Open all 6 doors above the air tubes. *(The 1 meter Clima+ unit only has 3 doors)*
2. Hose down all air tubes using volume water.
3. After cleaning check the status of the rubber seals of the doors.
4. Leave the doors ajar to allow the tubes to dry. Do not expose the tubes continuously to direct sunlight.
5. Close all doors when the tubes are completely dry.
6. It's recommended when finished cleaning, to leave the fans in the heat exchanger running for about 20 minutes. This way there will be no condensation and drying is speeded up. Make sure that only the lower doors are opened near the extraction box, to prevent dirty house air going through the clean unit again.



ATTENTION!

Do not stand or walk on the air tubes. This damages the tubes.



ATTENTION!

After cleaning the Clima+ unit, prevent the air tubes against direct sunlight. Make sure that the doors and covers are closed far enough. Direct sunlight damages these air tubes since they are UV sensitive.



PROTECTIVE GRIDS FANS

At the end of each cycle, clean the protective grids of the air measuring unit and the intake fan.



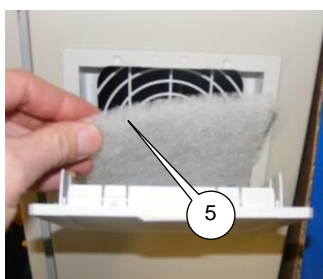
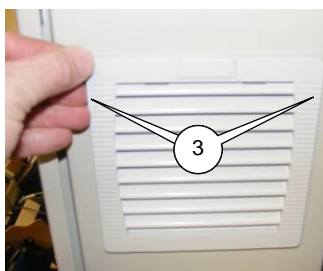
FILTER ELECTRICAL CABINET

At the end of each cycle, check the filter of the electrical cabinet for contamination. In case of contaminated filter, wash or replace it with a clean filter.

FILTER ELECTRICAL CABINET REPLACEMENT

Follow below procedure to replace the filter of the electrical cabinet:

1. Stop the Clima+ unit.
2. Switch OFF the main switch on the electrical cabinet.
3. Press on the side of the filter holder and pull slightly.
4. The filter holder now falls forward and could also be taken out for washing.
5. Take out the filter to wash, or replace the contaminated filter in the filter holder by a clean filter.
6. Place the filter holder back in the gap of the door and click the holder back.



CHANNELS

At the end of the first cycle retighten all clamping- and coupling lines of the channels. For later cycles always check the clamping and coupling lines of the channels for correct attachment.

EXHAUST CHIMNEY

Check regularly the presence and the tension of the 4 tension wires.

GAS SPRINGS

After cleaning the air tubes, check the functionality of the gas springs (dampers) and replace them if necessary.

WATER DRAINAGE

Whenever a long period of hard frost is forecasted, remove the siphon. Place the siphon back as soon as the temperature rises above freezing point. (Optional a frost protection set is available)



5. SPARE PARTS

SPARE PARTS LIST

Article nr. Description

Ventilator SGS-82-C4E complete

- 5702300084 Vent. Motor for SGS 1,5 kW
5702300086 Fanblade complete for SGS-82-C4E

Ventilator SGS-92-D4S complete

- 5702300085 Vent. Motor for SGS 2,2 kW
5702300087 Fanblade complete for SGS-92-D4S

Air measuring unit

- 5702300090 Sensor for air measuring unit Yellow
5702300091 Measuring fan Yellow
5702300311 Sensor for air measuring unit Green
5702300310 Measuring fan Green

- 5702300062 Temperaturesensor
5702300079 Clima Computer
5702300101 Clima Manager
5702300094 Clima Controller MB
5702300063 Remote Control RC-10
5702300097 Static Pressure switch 30-500Pa

Electrical switchbox

- 8001100104 Freq. drive ATV12 1.5kW Schneider
8001100008 Freq. drive V1000 2.2kW Omron

- 5702100036 Circulation ventilator 1 phase 230VAC Ø50
5702100078 Circulation ventilator 3 phase 380VAC Ø50

Various

- 4300400002 Closing sheet for LMU 710 Brown
4300400003 Closing sheet for LMU 820 Blue
4300400004 Closing sheet for LMU 920 White

- 4100500072 Epdm rubber strip 15x8 Black
5009900052 Slide lock 100x75mm
9307700008 Ladder
5702400223 Lance for cleaning

Gas springs

- 7100700006 Gas spring D14 500N
7100700007 Gas spring D14 700N
7100700008 Gas spring D14 1000N
7100700009 Gas spring D14 1500N

Filter sets

5702400226 Filter cloth (H= 1600) per meter.

4000300052 Terminal profile White L=2700mm



6. TROUBLE SHOOTING

TROUBLE SHOOTING LIST

[illegible]

